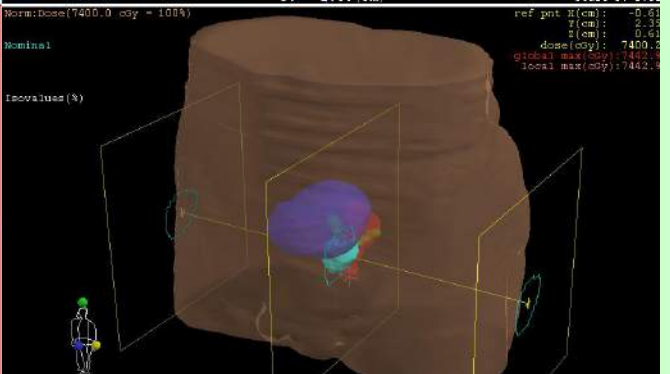
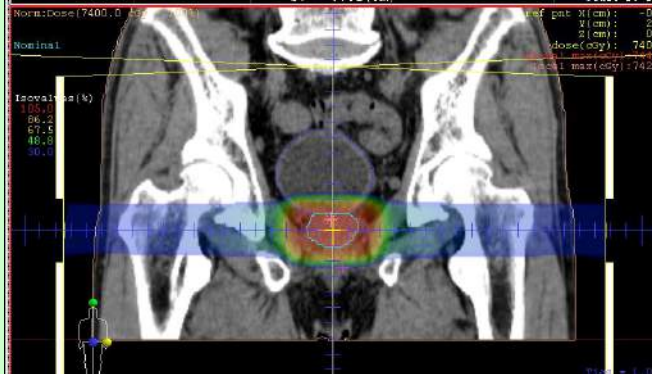
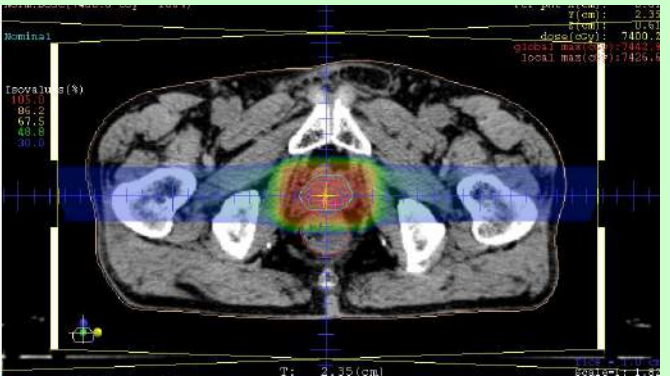


Medipolis Medical Research Institute

Medipolis Proton Therapy and Research Center





New Cancer Treatment
 21st Century Advanced Cancer Therapy
Medipolis Proton Therapy and Research Center

Medipolis Medical Research Institute

Medipolis Proton Therapy and Research Center



Director of the Center
Dr. Yoshio Hishikawa

Ph.D., School of Medicine, Kobe University. Radiologist. Certifying physician of radiation oncology. Chief courier of the Japan Clinical Study Group of Particle Therapy. Representative of the Japan Radiological Society. Representative of the Japanese Society for Therapeutic Radiology and Oncology. Chairperson of the Annual Meeting of the Japanese Society for Therapeutic Radiology and Oncology in 2011. Visiting Professor of Kobe University. Visiting Professor of Kagoshima University. Invited Professor of Osaka University. Awarded the Brachytherapy Award of European Society of Radiology in 1990. Former President and Honorary Director of Hyogo Ion Beam Medical Center.

**We aspire to be
 A hospital which is not like a hospital,
 Where patients are not treated like patients,
 Where everyone wants to come for treatment,
 Where everyone feels welcome.**



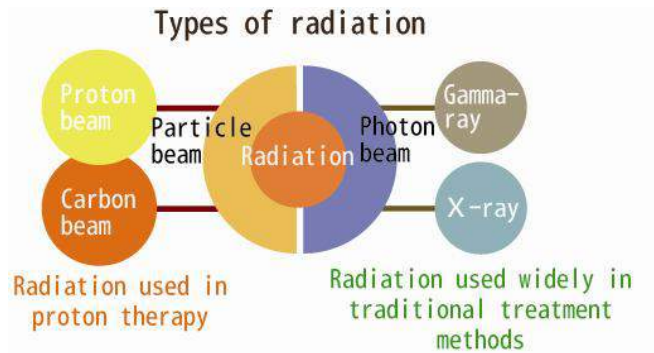
Chapter 1 Proton Therapy

A proton beam is a flow of particles generated from hydrogen gas. By using an accelerator, a synchrotron, to accelerate these particles to near the speed of light, cancer can be locally irradiated. The proton beam has the ability to focus and affect cancer lesions with minimal impact on surrounding muscle and tissues. Thus it is possible to minimize detrimental effects on normal healthy tissues. More than 70,000 cancer patients have been treated world-wide with very favorable results.

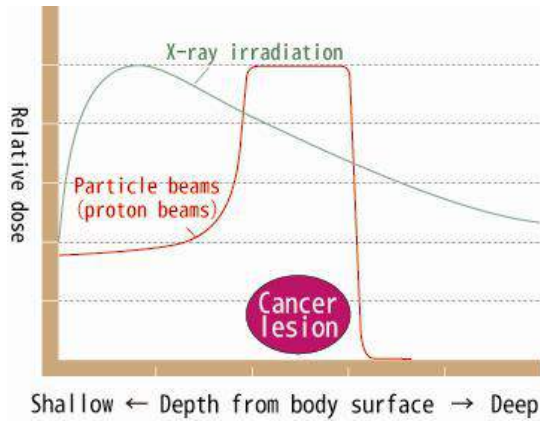
The radiation used for cancer treatment is divided into photon and ion beams. The photon beam is an electromagnetic wave, which is used in traditional radiation therapy such as X-rays, and gamma rays. Ion beam radiation uses hydrogen or carbon atoms, and the radiation therapy which uses these particles is called "particle

therapy.”

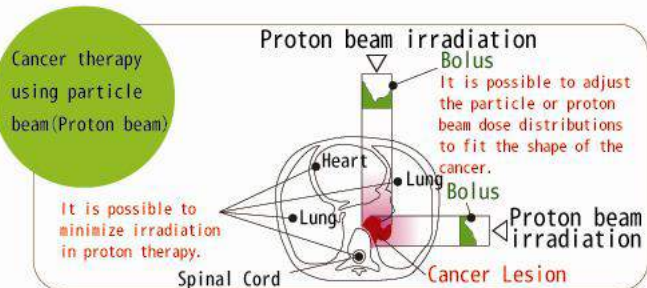
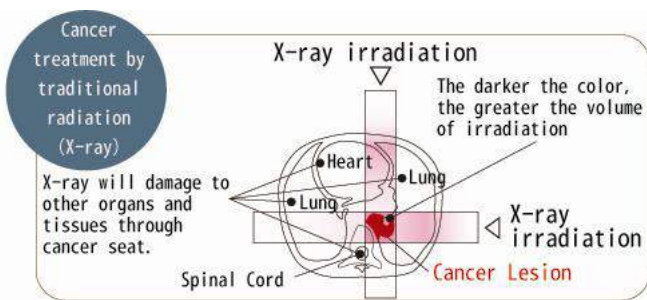
One of the characteristics of particle therapy is that the particle beam has a physical characteristic of energy emission called the “Bragg peak”, by which it can inflict lethal, concentrated damage on cancer cells.



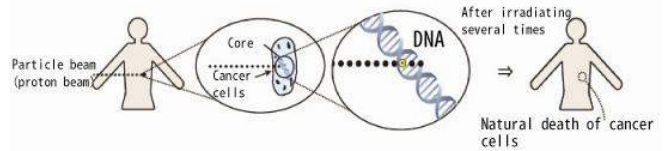
Difference between X-ray and particle beam treatments



Compared with X-rays, proton beam treatment can, with precision irradiate a strong beam on to the cancer lesion and focus its energy there, with minimal effect on normal tissue around the cancer.

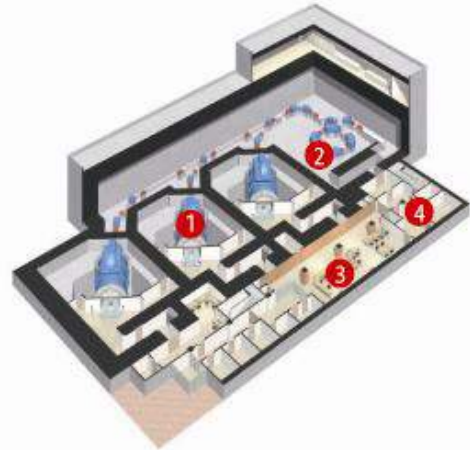


What happens in the body after proton irradiation?



When the body is irradiated with a proton beam, the beam can reach a tumor with a minimal effect on surrounding normal tissues. It then attacks DNA in the core of the cancer cells. The cancer cells damaged by the proton beam are unable to reproduce.

Chapter 2 Facility introduction



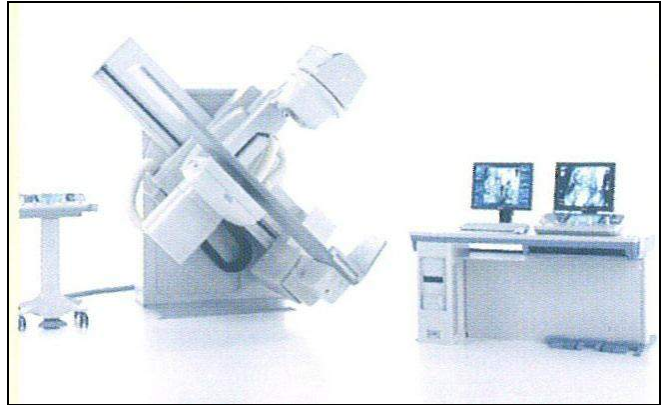
- ① **Gantry Irradiation Rooms (3 rooms)**
The Gantry is a device for focusing the proton beam. The 180-ton device rotates 360 degrees around the patient, and can deliver the proton beam from any direction.
- ② **Synchrotron**
It is a donut-shaped device that accelerates the proton beam to about 2/3 the speed of light.
- ③ **Operation/Control Room**
A room where the technologists control the proton beam irradiation
- ④ **Pre-treatment & Diagnostic Room**
A room for confirming the exact location of the cancer before the beginning of treatment.



Proton Beam Treatment Room



Accelerator (Synchrotron)

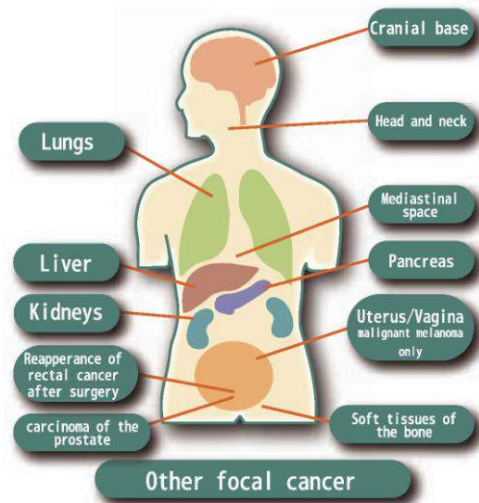


X-ray TV (DR)

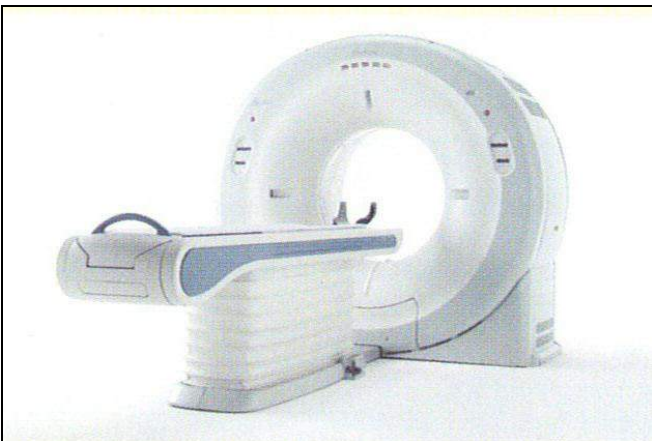


Gantry

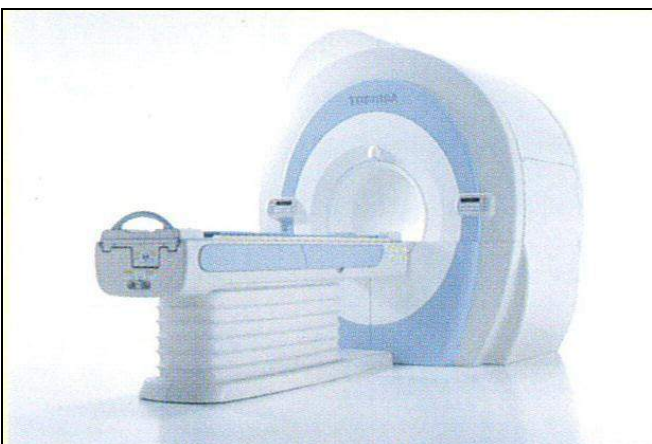
Chapter 3 Cancers for which proton therapy is applicable.



Proton therapy is not applicable for cancers in the digestive tract such as those in the stomach and large or small intestine, metastatic cancers that spread to multiple sites of the body, and blood cancers.



Cancer Diagnostic Device (CT)



Cancer Diagnostic Device (MRI)

Characteristics of proton therapy

- Fewer short or long term side effects.
- Outpatient treatment which allows patients to continue with a normal daily life.
- Senior-friendly treatment
- Targets tumor within 1mm accuracy reducing damage to surrounding healthy organs.
- Improves the patients quality of life during and after treatment

Chapter 4 Target cancers and treatment schedules

Target	Standard treatments *
Head and neck cancers (solitary)	26 times, 5.2 weeks
Skull base cancers (meningioma, chordoma, chondrosarcoma)	26 times, 5.2 weeks; 28 times, 5.6 weeks; or 30 times, 6 weeks
Lung cancer (for 1 lesion)	10 times, 2 weeks; 20 times, 4 weeks; 40 times, 8 weeks
Liver cancer (for 1 lesion)	10 times, 2 weeks; 20 times, 4 weeks; 38 times, 7.6 weeks
Prostate cancer	28 times, 5.6 weeks; 30 times, 6 weeks; 37 times, 7.4 weeks; 40 times, 8 weeks
Osteocartilaginous tumor (malignant)	8 times, 1.6 weeks; 20 times, 4 weeks; 26 times, 5.2 weeks; 40 times, 8 weeks
Locally recurrent rectal cancer, post surgery	37 times, 7.4 weeks
Mediastinal tumor (malignant)	26 times, 5.2 weeks
Locally-advanced pancreas cancer	25 times, 5 weeks
Kidney cancer	20 times, 4.0 weeks
Metastatic cancer (for 1 lesion in the lungs, liver, or lymph nodes)	8 times, 1.6 weeks

* The schedule of treatment will differ depending on the location and state of progression of the cancer in the organ.

Chapter 5 Past results of proton therapy

Hyogo Ion Beam Medical Center
(August 2008)

Disease	Target (month, year)	Number of cases	Survival rate after 3 years (%)	Local control rate after 3 years (%) [*] PSA control rate after 3 years (%) ^{**}
Head and neck cancers	5/ 2001→1/ 2007	208	42	66 (local control rate)
Lung cancer stage I	5/ 2001→1/ 2007	111	78	81 (local control rate)
Liver cancer	5/ 2001→1/ 2007	186	61	84 (local control rate)
Prostate cancer	4/ 2003→12/ 2004	291	98	92 (PSA control rate)

*: Cancer had not reappeared (recurrent worsening), at 3 years after irradiation.

** : Freedom from PSA failure; PSA is a biomarker of prostate cancer

Treatment examples

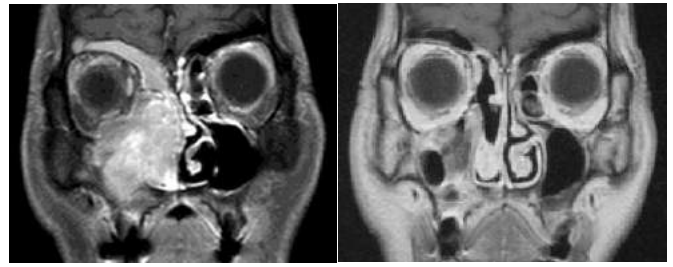
Gum cancer in right upper jaw (male, 70 y/o)



Pre-treatment

5 months after treatment
(almost healed)

Nasal passage (male, 80 y/o)



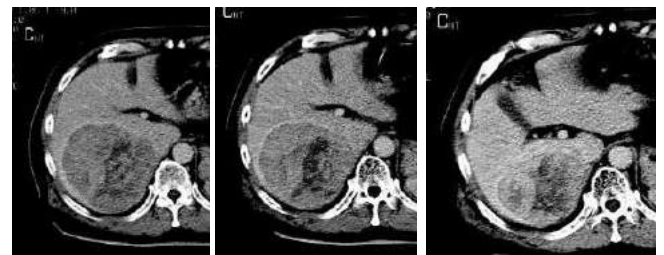
Pre-treatment

6 months after treatment
(almost healed)

Hepatic cancer (male, 70 y/o)



Pre-treatment



1 month after treatment

3 months after treatment

6 months after treatment



12 months after treatment (almost healed)

Chapter 6 Treatment process

- ① After the initial referral by the patient's physician and arrival at Medipolis, the patient will meet with a physician to discuss treatment options.
- ② The following week, two to five days will be spent planning the treatment process. During this time MRI, X-Rays, CT scans and blood tests will be done to confirm the diagnosis and the position of the cancer.

- ③ Based on this information, the radiation oncology department begins treatment planning. Boluses (proton machine direction and range compensators) and a patient positioning device for use during treatments are fabricated.
- ④ The following week after a day of orientation treatment begins. All treatment is on an out-patient basis Monday through Friday and takes approximately 15 – 40 minutes per day.
- ⑤ Duration of treatment depends on the type of cancer being treated. It can be as little as 2 weeks for lung and liver cancers, to 8 weeks for prostate cancer.
- ⑥ After treatment is complete, the patient returns to the care of their home physician for follow-up observation.

Q & A **Answers to your questions**

- **How many days will it take for treatment?**

The treatment period will be decided by the pathology of the tissue, the location, and progression of the cancer. With daily treatment, lung and liver cancers will take about 2 weeks, with an additional week for preparation. Prostate cancer treatment will take 6 to 8 weeks. A patient will be in the treatment center for approximately 15 to 40 minutes per day.

- **I am receiving radiotherapy now, but is it possible to receive proton therapy if the cancer recurs during radiotherapy?**

In general, we cannot provide proton therapy for the same location because the accumulated doses would be too large. However, if a new cancer appears near the location of the original tumor proton therapy is applicable.

- **In traditional radiotherapy, there are adverse effects such as loss of hair, appetite, or emesis, but are there any adverse effects or after effects with proton therapy?**

Proton therapy has significantly reduced adverse effects compared with traditional radiotherapy.

- **If the cancer recurs, can it be treated again?**

Cancers may recur. If it is appropriate, we can provide treatment.

- **Can the treatment be applied to breast cancer?**

Standard treatment for breast cancer is surgery with or without radiotherapy, but since the proton beam can be localized to irradiate the lesion, we think it is possible to apply proton therapy in breast cancer treatment. At this center, we have designated a treatment room for breast cancer research. A time will come when breast cancer patients can be treated with a proton beam without surgery.

- **At what stage of cancer can I receive proton therapy?**

There are different stages for cancer depending on whether it has metastasized, its size, how much it affects the cells around it, and types and site of the cancer. Under international standards, cancers which are confined to a specific area and which have not metastasized are classified as being at stages I or II. The basic criteria for applying proton therapy is that the cancer be at one of these stages. However, even if a

cancer metastasizes and if it will enhance the patients' quality of life or restrain the progression by treating primary or metastatic lesions, proton therapy can be used.

- **What are the costs of the treatment program?**

In addition to the cost of treatment itself, there are costs related to staying in Japan (e.g. flights to Japan and the journey to Ibusuki, accommodation, and food). Please contact us by e-mail (info@medipolis.org) for full details.

Efforts to proton therapy for breast cancer

Research and development for treating breast cancer without surgery

Breast cancer is the most prevalent malignant cancer among Japanese women, and it is expected to increase in young women in the future. Currently the standard treatment for patients with early breast cancer consists of surgery and radiotherapy. Understandably, there are some women who are very reluctant to undergo this invasive alternative.

In order to investigate whether proton therapy is helpful for these women, we started a research group (Society for Proton Therapy for Breast Cancer) with breast cancer treatment specialists in the Kyushu area.

Our first research objective is to develop a breast cancer therapy device and put it into practical use. One of the 3 treatment rooms is used only for the study of early breast cancer treatment.

Medipolis Ibusuki
IBUSUKI BAY TERRACE HOTEL&SPA



Comfortable space and excellent service
A place for peace and healing

Comfortable space

Adjacent to the Treatment Center is the IBUSUKI BAY TERRACE HOTEL&SPA (Place of Good Fortune) our hotel and Spa for relaxation and recuperation. There are 3 types of rooms (Japanese style, Western style, and Suite), from your room you can see Kinko Bay, the Osumi peninsula, and the distant Sakurajima volcano. We have a restaurant that serves the varied local “Satsuma” cuisine. Ingredients are sourced from the local ocean and farms. Fresh fruits and vegetables come from our own organic gardens. Our master chef is ready to serve you.



Hall



Guest room



Fresh produce



Medipolis garden

Rich relaxation

Experience a rare taste of Japanese culture in our Onsen (hot mineral water pool) with a full view of Kinko Bay and the distant Osumi peninsula. Or enjoy the ceramic spa (the next step in sand bath relaxation), private open air mineral baths can be enjoyed in the fragrance of the open woods, bedrock baths, and space for relaxation and stress relief await you. We have an illuminated, artistically designed experience called the Assension to aid healing; it allows you to relax lying down surrounded by 20,000 LEDs, and healing music. We provide healing time and space.



Outdoor bath



Ascension



Ceramic bath



Bedrock bath

Healthy body and mind

Massage by aroma therapists and certified chiropractors is conducive to the improvement of health. Exercise facilities include a Japanese style ground golf course, tennis courts, pool, gymnasium, weight training room with machines and free weights, and an area for stretching.



Pool



Aroma therapy



Athletic facilities



Ground Golf course

Surrounded by sunlight and greenery

You can walk along the nature trail and enjoy the sunshine filtering through the trees, and you will come to an observation deck with a grand 360 degree panoramic view. You can see Ibusuki City, Osumi peninsula, and if the weather permits, you can also see Sakurajima, and to the south the remote islands (Takeshima, Iojima, and Yakushima). You will also find the Medipolis organic garden, the outdoor mineral water foot bath where you can enjoy the fall colors, a row of cherry blossom trees, and a hydrangea trail.



Nature trail

■Medipolis Medical Research Institute■



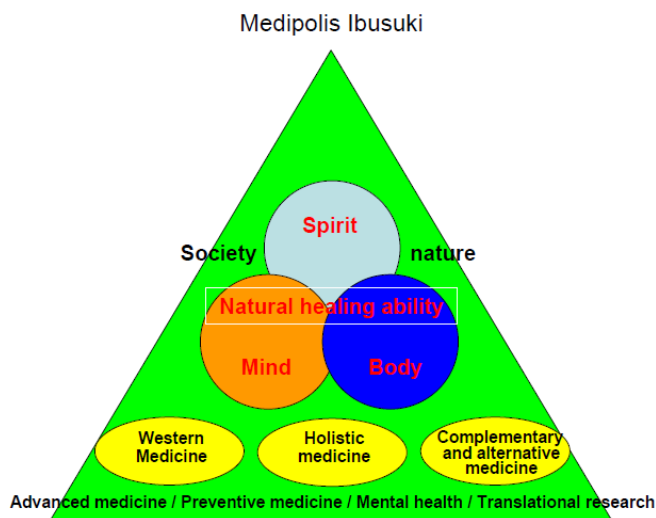
Ryoichi Nagata, Ph.D.
**Chairman of the Medipolis
 Medical Research Institute**

Ph.D. in Medicine (Kagoshima University), Masters in Buddhist Tantrism (Koyasan University). Executive Director of the Japanese Society of Preventive Medicine, Supervisory Doctor of the Japanese Society of Clinical Pharmacology and Therapeutics, Member of Management Council of Kagoshima University, Councilor and guest professor of St. Marianna University School of Medicine, Guest professor of University of Maryland, Guest professor of Tokyo Medical University, Guest professor of Hokkaido University, Clinical professor of Kochi Medical School, Guest professor of

Koyasan University, Faculty of Pharmaceutical Medicine of the Royal Colleges of Physicians of the United Kingdom (FFPM). “Comfortable Creation Award” of the Japanese Joint Association of Labor Standard, “Local Activation Contributing Company Award” of Nikkei Inc. (Co-host Ministry of Land, Infrastructure, Transport, and Tourism), “The first place of Economic and Industry Award” of Kagoshima Chamber of Commerce and Industry, “54th Southern Japanese Culture Award in Industry” of Minami Nihon Shinbun, “Honorary Citizen” of Gaoyao, Guangdong, China, “Honorary Consul” of the Kingdom of Bhutan. CEO, Shin Nippon Biomedical Laboratories, Ltd.

Medipolis Medical Research Institute is a non profit corporation for contributing to medical improvement and health enhancement through research, diagnosis, and treatment of chronic disease derived from cancer and vascular diseases, along with practical research in preventive medicine and mental health.

At Medipolis Proton Therapy and Research Center, we aspire to greatly improve our patients’ quality of life domestically and overseas by practicing fundamental and low-impact cancer treatment using proton therapy.



We are located in the southern city of Ibusuki, in an area famous for generous hospitality. “Medipolis Ibusuki” is a project of cooperation between government, industry, and academia to promote “medicine that radiates from Southern Kyushu to the rest of the world.” The facilities include Medipolis Proton Therapy and Research Center that provides cutting edge treatment, a clinic that practices integrated and holistic medicine, spas, a resort hotel, and nature trails and a gym for health enhancement.

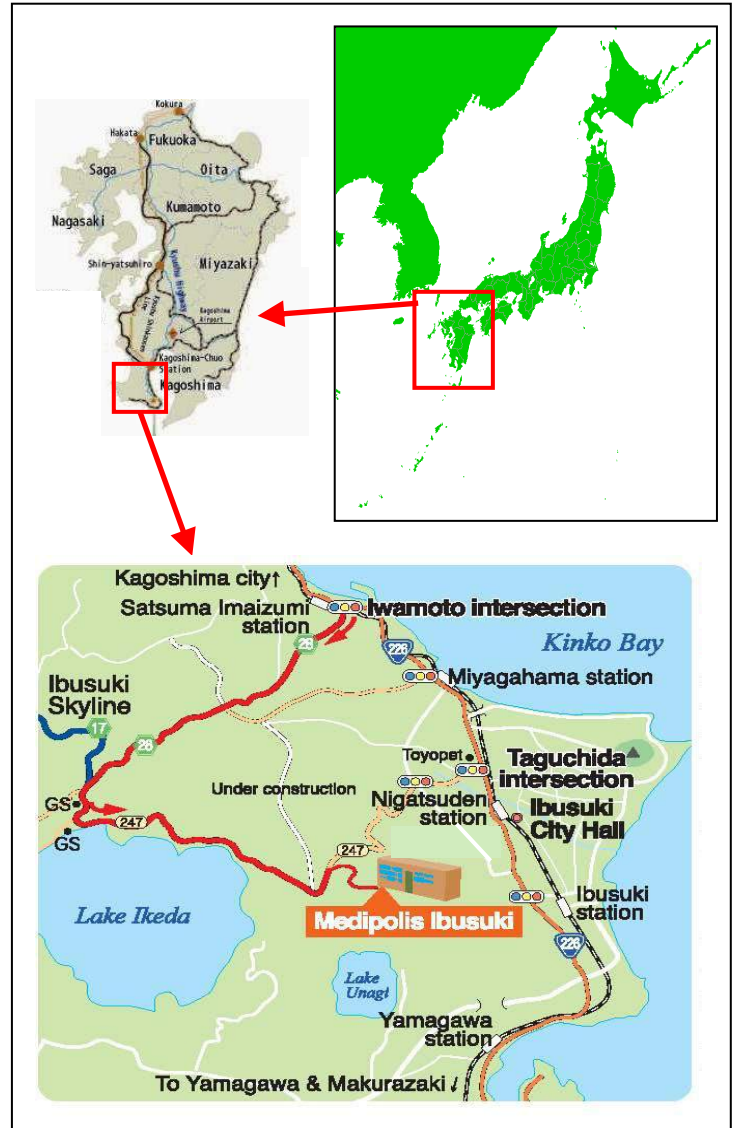
Access

〈By car〉

- Approximately 85 minutes from Kagoshima Airport to Medipolis Ibusuki (by way of Kyushu Highway and Ibusuki Skyline, turning left at Lake Ikeda)
- Approximately 70 minutes from Kagoshima City to Medipolis Ibusuki (Route 226, turning right at the Iwamoto intersection, and turning left at Lake Ikeda)

〈By airport shuttle bus〉

- Approximately 95 minutes from Kagoshima Airport to JR Ibusuki Station by airport limousine
- Approximately 15 minutes from JR Ibusuki Station to Medipolis Ibusuki by taxi



The Kyushu Shinkansen (bullet train) route from Hakata to Kagoshima Central Station is completed, and it takes approximately 3 hours from Fukuoka to Ibusuki.



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 891-0304
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